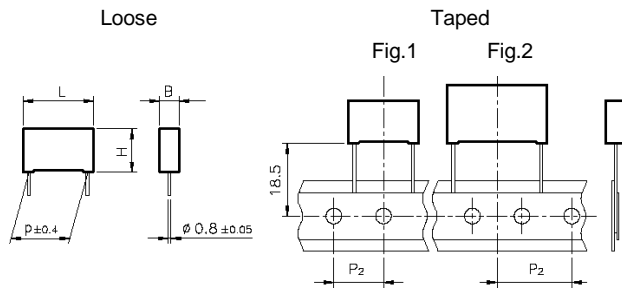


METALLIZED POLYPROPYLENE FILM CAPACITOR A.C. APPLICATIONS

Typical applications: electronic lighting (i.e. car headlamp and ballast), pulse applications with high A.C. voltage and medium current.

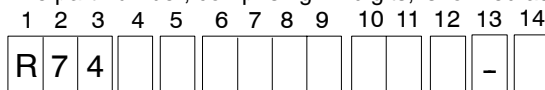
PRODUCT CODE: R74



All dimensions are in mm.

PRODUCT CODE SYSTEM

The part number, comprising 14 digits, is formed as follows:



Digit 1 to 3 Series code.

Digit 4 a.c. rated voltage:

L = 250V N = 400V 5 = 500V

7 = 700V 9 = 900V

Digit 5 Pitch:

l=15mm; N=22.5mm; R=27.5mm

Digit 6 to 9 Digits 7 - 8 - 9 indicate the first three digits of Capacitance value and the 6th digit indicates the number of zeros that must be added to obtain the Rated Capacitance in pF.

Digit 10 to 11 Mechanical version and/or packaging (table 1)

Digit 12 Identifies the dimensions and electrical characteristics.

Digit 13 Internal use.

Digit 14 Capacitance tolerance:

J=5%; K=10%

GENERAL TECHNICAL DATA

Dielectric: polypropylene film.

Plates: aluminium layer deposited by evaporation under vacuum.

Winding: non-inductive type.

Leads: tinned wire.

Protection: plastic case, epoxy resin filled.
Box material is solvent resistant and flame retardant according to UL94 V0.

Marking: manufacturer's logo, series (R74), dielectric code (MKP), capacitance, tolerance, A.C. rated voltage, manufacturing date code.

Climatic category: 55/100/56 IEC 60068-1

Operating temperature range: -55 to +105°C

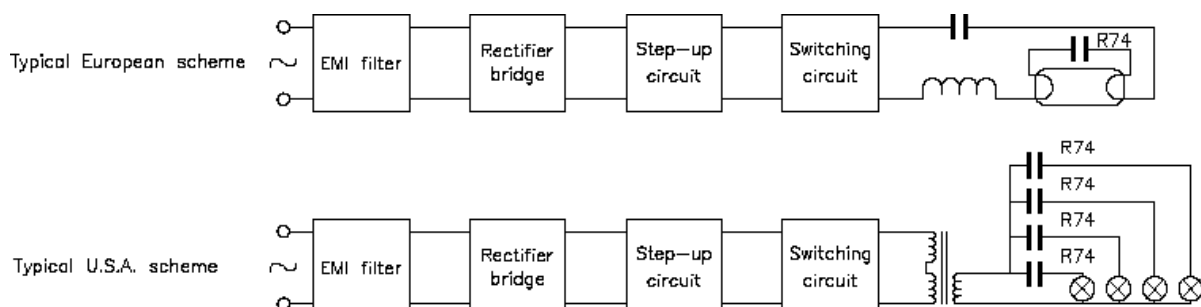
Related documents: IEC 60384-16; IEC 60384-17
CECC 31200

Table 1 (for more detailed information, please refer to page 15).

Standard packaging style	Lead length (mm)	Taping style			Ordering code (Digit 10 to 11)
		P ₂ (mm)	Fig. (No.)	Pitch (mm)	
AMMO-PACK		12.70	1	15.0	DQ
AMMO-PACK		19.05	2	22.5	DQ
REEL Ø 355mm		12.70	1	15.0	GY
REEL Ø 500mm		12.70	1	15.0	CK
REEL Ø 500mm		19.05	2	22.5/27.5	CK
Loose, short leads	4 +2				AA
Loose, long leads	30 +5				50

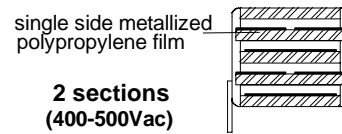
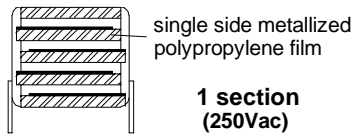
Note: Ammo-pack is the preferred packaging for taped version.

Typical application: LAMP CAPACITOR IN ELECTRONIC BALLAST



METALLIZED POLYPROPYLENE FILM CAPACITOR A.C. APPLICATIONS

PRODUCT CODE: R74



Rated Cap.	250Vac* (1 section)				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
0.015μF	5.0	11.0	18.0	15.0	250	31 E4	R74LI2150--0--
0.018μF	5.0	11.0	18.0	15.0	250	31 E4	R74LI2180--0--
0.022μF	5.0	11.0	18.0	15.0	250	31 E4	R74LI2220--0--
0.027μF	5.0	11.0	18.0	15.0	250	31 E4	R74LI2270--0--
0.033μF	5.0	11.0	18.0	15.0	250	31 E4	R74LI2330--0--
0.039μF	6.0	12.0	18.0	15.0	250	31 E4	R74LI2390--0--
0.047μF	6.0	12.0	18.0	15.0	250	31 E4	R74LI2470--0--
0.056μF	7.5	13.5	18.0	15.0	250	31 E4	R74LI2560--0--
0.068μF	7.5	13.5	18.0	15.0	250	31 E4	R74LI2680--0--
0.082μF	8.5	14.5	18.0	15.0	250	31 E4	R74LI2820--0--
0.10μF	8.5	14.5	18.0	15.0	250	31 E4	R74LI3100--0--
0.12μF	10.0	16.0	18.0	15.0	250	31 E4	R74LI3120--0--

Mechanical version and packaging (Table 1)

Internal use

Tolerance: J (± 5%); K (± 10%)

Rated Cap.	400Vac (2 sections)				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
6800pF	5.0	11.0	18.0	15.0	1000	200 E4	R74NI 1680--0--
8200pF	5.0	11.0	18.0	15.0	1000	200 E4	R74NI 1820--0--
0.010μF	5.0	11.0	18.0	15.0	1000	200 E4	R74NI 2100--0--
0.012μF	6.0	12.0	18.0	15.0	1000	200 E4	R74NI 2120--0--
0.015μF	6.0	12.0	18.0	15.0	1000	200 E4	R74NI 2150--0--
0.018μF	7.5	13.5	18.0	15.0	1000	200 E4	R74NI 2180--0--
0.022μF	7.5	13.5	18.0	15.0	1000	200 E4	R74NI 2220--0--
0.027μF	8.5	14.5	18.0	15.0	1000	200 E4	R74NI 2270--0--
0.033μF	8.5	14.5	18.0	15.0	1000	200 E4	R74NI 2330--0--
0.039μF	10.0	16.0	18.0	15.0	1000	200 E4	R74NI 2390--0--
0.047μF	10.0	16.0	18.0	15.0	1000	200 E4	R74NI 2470--0--
0.039μF	6.0	15.0	26.5	22.5	500	100 E4	R74NN2390--0--
0.047μF	7.0	16.0	26.5	22.5	500	100 E4	R74NN2470--0--
0.056μF	7.0	16.0	26.5	22.5	500	100 E4	R74NN2560--0--
0.068μF	8.5	17.0	26.5	22.5	500	100 E4	R74NN2680--0--
0.082μF	10.0	18.5	26.5	22.5	500	100 E4	R74NN2820--0--
0.10μF	10.0	18.5	26.5	22.5	500	100 E4	R74NN3100--0--

Rated Cap.	500Vac (2 sections)				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1500pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1150--0--
1800pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1180--0--
2200pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1220--0--
2700pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1270--0--
3300pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1330--0--
3900pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1390--0--
4700pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1470--0--
5600pF	5.0	11.0	18.0	15.0	1300	340 E4	R745I 1560--0--
6800pF	6.0	12.0	18.0	15.0	1300	340 E4	R745I 1680--0--
8200pF	6.0	12.0	18.0	15.0	1300	340 E4	R745I 1820--0--
0.010μF	6.0	12.0	18.0	15.0	1300	340 E4	R745I 2100--0--
0.012μF	7.5	13.5	18.0	15.0	1300	340 E4	R745I 2120--0--
0.015μF	7.5	13.5	18.0	15.0	1300	340 E4	R745I 2150--0--
0.018μF	8.5	14.5	18.0	15.0	1300	340 E4	R745I 2180--0--
0.022μF	10.0	16.0	18.0	15.0	1300	340 E4	R745I 2220--0--
0.027μF	10.0	16.0	18.0	15.0	1300	340 E4	R745I 2270--0--
0.018μF	6.0	15.0	26.5	22.5	700	180 E4	R745N2180--0--
0.022μF	6.0	15.0	26.5	22.5	700	180 E4	R745N2220--0--
0.027μF	7.0	16.0	26.5	22.5	700	180 E4	R745N2270--0--
0.033μF	7.0	16.0	26.5	22.5	700	180 E4	R745N2330--0--
0.039μF	8.5	17.0	26.5	22.5	700	180 E4	R745N2390--0--
0.047μF	10.0	18.5	26.5	22.5	700	180 E4	R745N2470--0--
0.056μF	10.0	18.5	26.5	22.5	700	180 E4	R745N2560--0--
0.068μF	11.0	20.0	26.5	22.5	700	180 E4	R745N2680--0--
0.082μF	11.0	20.0	32.0	27.5	500	130 E4	R745R2820--0--
0.10μF	11.0	20.0	32.0	27.5	500	130 E4	R745R3100--0--

Mechanical version and packaging (Table 1)

Internal use

Tolerance: J (± 5%); K (± 10%)

All dimensions are in mm.

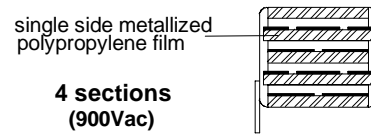
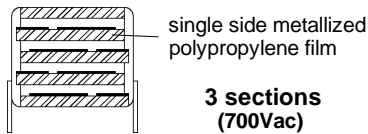
Note: If the working voltage (V) is lower than the rated voltage (V_R), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V_R/V.

The pulse characteristic K₀ depends on the voltage wave-form and in any case it cannot overcome the value given in the above table. The dv/dt test is carried out at 2 times the above values.

* Not suitable for across-the-line applications. Please refer to Interference Suppression Capacitors (page 105).

METALLIZED POLYPROPYLENE FILM CAPACITOR A.C. APPLICATIONS

PRODUCT CODE: R74



Rated Cap.	700Vac (3 sections)				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1100--0--
1200pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1120--0--
1500pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1150--0--
1800pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1180--0--
2200pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1220--0--
2700pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1270--0--
3300pF	5.0	11.0	18.0	15.0	3000	960 E4	R7471 1330--0--
3900pF	6.0	12.0	18.0	15.0	3000	960 E4	R7471 1390--0--
4700pF	6.0	12.0	18.0	15.0	3000	960 E4	R7471 1470--0--
5600pF	6.0	12.0	18.0	15.0	3000	960 E4	R7471 1560--0--
6800pF	7.5	13.5	18.0	15.0	3000	960 E4	R7471 1680--0--
8200pF	7.5	13.5	18.0	15.0	3000	960 E4	R7471 1820--0--
0.010μF	8.5	14.5	18.0	15.0	3000	960 E4	R7471 2100--0--
0.012μF	10.0	16.0	18.0	15.0	3000	960 E4	R7471 2120--0--
0.015μF	10.0	16.0	18.0	15.0	3000	960 E4	R7471 2150--0--
8200pF	6.0	15.0	26.5	22.5	1300	420 E4	R747N1820--0--
0.010μF	6.0	15.0	26.5	22.5	1300	420 E4	R747N2100--0--
0.012μF	6.0	15.0	26.5	22.5	1300	420 E4	R747N2120--0--
0.015μF	6.0	15.0	26.5	22.5	1300	420 E4	R747N2150--0--
0.018μF	7.0	16.0	26.5	22.5	1300	420 E4	R747N2180--0--
0.022μF	8.5	17.0	26.5	22.5	1300	420 E4	R747N2220--0--
0.027μF	8.5	17.0	26.5	22.5	1300	420 E4	R747N2270--0--
0.033μF	10.0	18.5	26.5	22.5	1300	420 E4	R747N2330--0--
0.039μF	10.0	18.5	26.5	22.5	1300	420 E4	R747N2390--0--
0.047μF	11.0	20.0	26.5	22.5	1300	420 E4	R747N2470--0--

Mechanical version and packaging (Table 1) _____
 Internal use _____
 Tolerance: J (± 5%); K (± 10%) _____

Rated Cap.	900Vac (4 sections)				Max dv/dt (V/μs)	Max K ₀ (V ² /μs)	Part Number
	B	H	L	p			
1000pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1100--0--
1200pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1120--0--
1500pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1150--0--
1800pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1180--0--
2200pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1220--0--
2700pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1270--0--
3300pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1330--0--
3900pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1390--0--
4700pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1470--0--
5600pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1560--0--
6800pF	6.0	15.0	26.5	22.5	2500	1000 E4	R749N1680--0--
8200pF	7.0	16.0	26.5	22.5	2500	1000 E4	R749N1820--0--
0.010μF	7.0	16.0	26.5	22.5	2500	1000 E4	R749N2100--0--
0.012μF	8.5	17.0	26.5	22.5	2500	1000 E4	R749N2120--0--
0.015μF	10.0	18.5	26.5	22.5	2500	1000 E4	R749N2150--0--
0.018μF	10.0	18.5	26.5	22.5	2500	1000 E4	R749N2180--0--
0.022μF	11.0	20.0	26.5	22.5	2500	1000 E4	R749N2220--0--

Mechanical version and packaging (Table 1) _____
 Internal use _____
 Tolerance: J (± 5%); K (± 10%) _____

All dimensions are in mm.

Note : If the working voltage (V) is lower than the rated voltage (V_R), the capacitor may work at higher dv/dt. In this case the maximum value allowed is obtained multiplying the above value (see table dv/dt) with the ratio V_R/V.
 The pulse characteristic K₀ depends on the voltage wave-form and in any case it cannot overcome the value given in the above table.
 The dv/dt test is carried out at 2 times the above values.

ELECTRICAL CHARACTERISTICS

Rated voltage (V_R):

250Vac (630Vdc) - 400Vac (1000Vdc)
500Vac (1300Vdc) - 700Vac (1600Vdc)
900Vac (2000Vdc)

Rated temperature (T_R): +85°C

Temperature derated voltage:

for temperatures between +85°C and +105°C a decreasing factor of 1.25% per degree °C on the rated voltage V_R has to be applied.

Capacitance range:

1000pF to 0.12μF

Capacitance values:

E12 series (IEC 60063 Norm).

Capacitance tolerances (measured at 1 kHz):

± 5% (J); ± 10% (K).

Total self inductance : (L)

(Lead length ≈ 2 mm)

Pitch (mm)	15	22.5	27.5
L (nH) ≈	10	18	18

Dissipation factor (DF):

$\text{tg}\delta \times 10^{-4}$ at +25°C ± 5°C

kHz	$\text{tg}\delta \times 10^{-4}$
10	≤ 6
100	≤ 30

Insulation resistance:

Test conditions

Temperature: +25°C ± 5°C

Voltage charge time: 1 min

Voltage charge: 100Vdc

Performance

≥ 1 × 10⁵ MΩ (Typ.value: 5x 10⁵ MΩ)

Test voltage between terminations:

1.6 × V_R applied for 2 s at 25°C ± 5°C

TEST METHOD AND PERFORMANCE

Damp heat, steady state:

Test conditions

Temperature: +40°C ± 2°C

Relative humidity (RH): 93% ± 2%

Test duration: 56 days

Performance

Capacitance change $|\Delta C/C|$: ≤ 2%

DF change ($\Delta \text{tg}\delta$): ≤ 10 × 10⁻⁴ at 1kHz

Insulation resistance: ≥ 50% of initial limit.

Endurance:

Test conditions

Temperature: +85°C ± 2°C

Test duration: 2000 h

Voltage applied: 1.25 × V_R (a.c.) at 50Hz

Performance

Capacitance change $|\Delta C/C|$: ≤ 5%

DF change ($\Delta \text{tg}\delta$): ≤ 15 × 10⁻⁴ at 10kHz

Insulation resistance: ≥ 50% of initial limit.

Resistance to soldering heat:

Test conditions

Solder bath temperature: 260°C ± 5°C

Dipping time (with heat screen): 10 s ± 1 s

Performance

Capacitance change $|\Delta C/C|$: ≤ 1%

DF change ($\Delta \text{tg}\delta$): ≤ 10 × 10⁻⁴ at 10kHz

Insulation resistance: ≥ initial limit.

Long term stability (after two years):

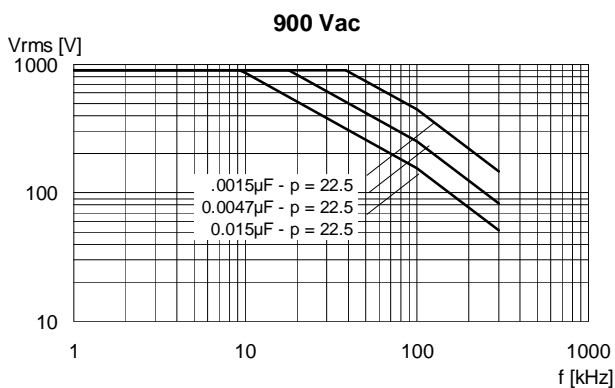
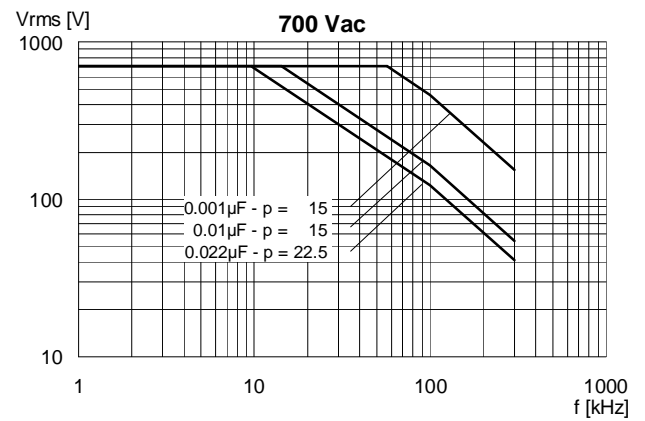
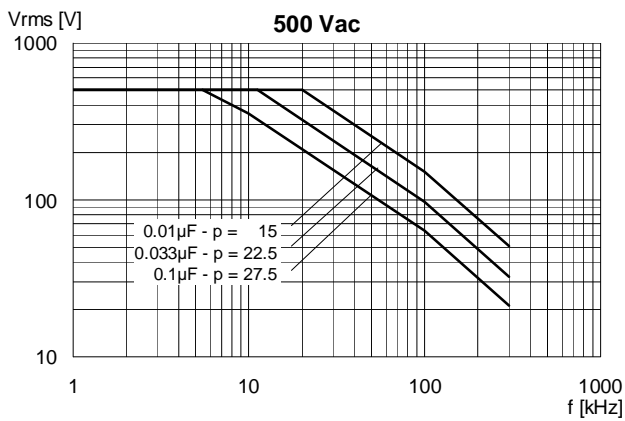
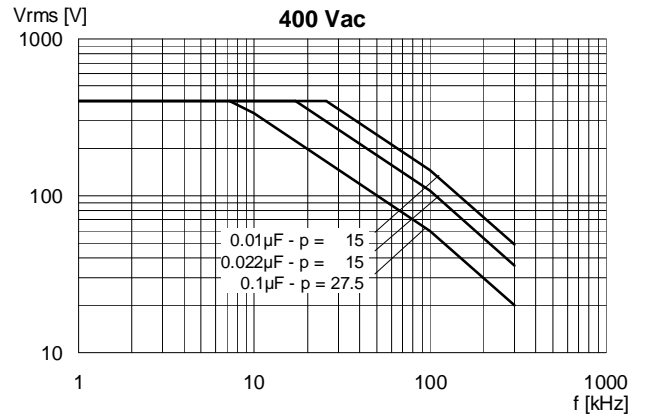
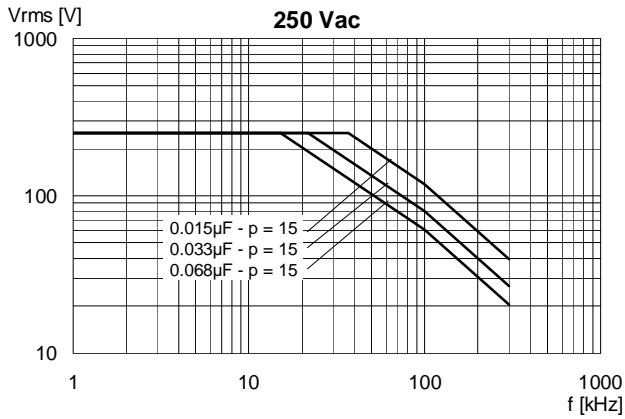
Storage: standard environmental conditions (see page 10).

Performance

Capacitance change $|\Delta C/C|$: ≤ 0.5%

MKP Series
METALLIZED POLYPROPYLENE FILM CAPACITOR
A.C. APPLICATIONS

MAX. VOLTAGE (Vr.m.s.) VERSUS FREQUENCY (sinusoidal wave-form / $T_h \leq 40^\circ\text{C}$)



Note: p (pitch) in mm.